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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/530,426

04/05/2005

Haruhiko Habuta

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EXAMINER

HIGGINS, GERARD T

ART UNIT

PAPER NUMBER

1794

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/530,426	<b>Applicant(s)</b> HABUTA ET AL.	
	<b>Examiner</b> GERARD T. HIGGINS	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 June 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment filed 06/19/2008 has been entered. Currently claims 1-7 are pending and claims 8-11 are cancelled.

### ***Election/Restrictions***

2. Applicant's election of Group I, claims 1-7 in the reply filed on 06/19/2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)); however, since applicants have cancelled the non-elected claims, the restriction requirement is no longer necessary and has been withdrawn.

### ***Drawings***

3. The drawings were received on 06/19/2008. These drawings are acceptable.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

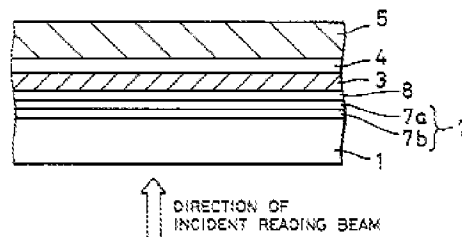
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Higuchi et al. (6,009,070).

With regard to claims 1-3, Higuchi et al. disclose the dual layer optical information medium of Figure 4B (col. 7, lines 14-36).

**FIG. 4B**



The device is comprised of a substrate **1**, on which there are bumps and depressions in the form of pits and grooves that make up the recording layer of the first optical information layer (col. 5, line 51 to col. 6, line 7). The laser for recording or reproduction is incident from the first information layer side of the medium. The pits and grooves provided on substrate **1** have information that may be reproduced by irradiation of a laser beam. The layer **7b** is the transmittance adjustment layer, which is the same as part **2b**, which is disclosed at col. 6, lines 20-29, included among these materials are many of the materials that applicants state are completely appropriate for their invention (ZnS, ZrO<sub>2</sub>, etc.). There is a low refractive index layer **8**, which may be comprised of SiO<sub>2</sub> (col. 7, lines 24-29). Applicants state that this material is completely appropriate for their invention. There is a spacer layer **3** upon which is formed a series of bumps and depressions in the form of pits and grooves corresponding to a second information

layer (col. 6, lines 30-43). The Examiner deems that the pits and grooves seen as one traverses across the recording layer means that the “recording layer...can change between two optically different states,” as the pits and grooves are features of different optical states that represent recorded data.

With regard to applicants' new limitations in claim regarding the order in which the low refractive index layer and transmittance adjusting layer are formed, the Examiner deems these to be product-by-process limitations. It has been held that “even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” Please see MPEP 2112 and *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). The Examiner deems that the order in which the layers are laminated will not affect the functioning of the device when completed. Given that Higuchi et al. disclose an optical information recording medium identical to that claimed, the Examiner deems the device will function the same as applicants' medium.

With regard to applicants' new limitations that the refractive index layer is formed **on** the optical separating layer and the transmittance adjusting layer is formed **on** the low refractive index layer, the Examiner notes the broadest reasonable interpretation of the word “on” as defined by Meriam-Webster Online: “**1c** used as a function word to indicate position in close proximity with.” The Examiner deems that using this

Art Unit: 1794

interpretation of the word "on," the refractive index layer is formed **on** the optical separating layer and the transmittance adjusting layer is formed **on** the low refractive index layer.

With regard to claims 2 and 3, Higuchi et al. disclose at col. 7, lines 24-29 that the thin layer **8** is inserted to prevent other layers from being affected by moisture; further, they state that the material of the layer **8** is chosen such that it has a refractive index nearly equal to that of the spacer layer **3**. Judging by the fact that the materials of Higuchi et al. are equivalent to the materials used by applicants, the refractive indices of the low refractive index layer and the first optical separating layer would inherently satisfy the relationships in applicants' claims 2 and 3.

With regard to claim 6, Higuchi et al. disclose that the low refractive index layer can be comprised of SiO<sub>2</sub> (col. 7, lines 24-29).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al. (6,009,070).

Higuchi et al. disclose all of the limitations of applicants' claim 1 in section 5 above. Additionally it disclose the reflective layer **7a** (see Figure 4B above); however, they fail to disclose the arrangement of the reflective layer seen in applicants' claim 5 and the thickness of the low refractive index layer of claim 7.

With regard to claim 5, the device of Figure 4A discloses a reflective layer **2a** disposed in between the recording layer (pits and grooves on substrate **1**) and the transmittance adjustment layer **2b**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to reverse the layer arrangement of the reflective layer **7a** and the transmittance layer **7b** in the device of Figure 4B. It has been held that a mere rearrangement of parts that "would not have modified the operation of the device" is an obvious modification. Please see MPEP 2144.04 and *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). The interchangeability and addition of various reflection and dielectric layers are well known in the art of optical recording media to modify the properties of transmittance and absorption of light among the recording layers.

With regard to the mathematical relationships of the indices of refraction of the transmittance adjusting layer and the reflective layer, since the materials of the reflective layer (col. 6, lines 8-18) and the transmittance adjusting layer (col. 6, lines 19-28) are equivalent to those of applicants, the indices of refraction would intrinsically satisfy the mathematical relationships of claim 5.

With regard to claim 7, Higuchi et al. disclose one example of the low refractive index layer thickness at col. 7, lines 55-57; however, they do not disclose a thickness of 1 to 25 nm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the thickness of the low refractive index layer, including to those values claimed, in order to provide the proper amount of protection from moisture and residual monomers of the spacer layer while still maintaining the proper optical transparency of the optical medium.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al. (6,009,070), as applied to claim 1, in view of Nishihara et al. (US 2002/0054983).

Higuchi et al. disclose all the limitations of applicants' claim 1 as seen in section 5 above; however, it fails to include a first recording layer comprised of a phase change material.

Nishihara et al. disclose a dual-stack optical recording medium, wherein the first recording stack includes a phase change material [0017] to [0021] that can change in between an amorphous and crystalline state.

Since Nishihara et al. and Higuchi et al. are both drawn to optical recording media; it would have been obvious to one having ordinary skill in the art at the time the invention was made to make use of the phase change materials of Nishihara et al. as the first recording layer of Higuchi et al. The results of which would have been predictable to one having ordinary skill in the art of optical recording media. The layers



of Nishihara et al. have good recording/reproducing characteristics; furthermore, it is obvious to one in the art of optical media manufacture to make rewriteable optical discs because they are beneficial as multi-use optical recording media.

With respect to the requirement that the transmittance in the amorphous and crystalline states are both greater than 40%, Nishihara et al. state at [0026] that they want the average of the transmittance in the amorphous and crystalline states to be greater than or equal to 40%, especially at about 390-430 nm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the transmittance in both the amorphous and crystalline states to be as high as possible, including the percentages claimed, such that enough laser light could reach the second and subsequent recording layers in order to properly read and record to them without experiencing errors.

### ***Response to Arguments***

9. Applicant's arguments, see Remarks, filed 06/19/2008, with respect to the objections to the drawings, the objections to claims 1 and 5, and the rejection of claims 1-7 under 35 U.S.C. 112, second paragraph have been fully considered and are persuasive. The relevant objections/rejections have been withdrawn.

With regard to the rejection of claims 1-7 under 35 U.S.C. 112, second paragraph, after reading the limitations of applicants' claim 1, the Examiner realized that it was definite because the claimed language is that the "optical separating layer is provided in contact with the ***first information layer***" and not the recording layer.

10. Applicant's arguments filed 06/19/2008 have been fully considered but they are not persuasive.

With regard to the rejection of claims 1-3, and 6 under 35 U.S.C. 102(b) as being anticipated by Higuchi et al. '070, applicants are attempting to argue that the Examiner has not shown a "recording layer that can change between two optically different states" and that the Examiner has not shown the proper order for the relevant layers.

With regard to the first argument, the device of Higuchi et al. is comprised of a substrate **1**, on which there are bumps and depressions in the form of pits and grooves that make up the recording layer of the first optical information layer (col. 5, line 51 to col. 6, line 7). The pits and grooves provided on substrate **1** have information that may be reproduced by irradiation of a laser beam. The Examiner deems that the pits and grooves seen as one traverses across the recording layer means that the "recording layer...can change between two optically different states," as the pits and grooves are features of different optical states that represent recorded data.

With regard to the order of the layers, the Examiner set forth in his previous office action and in the continues to say that the recording layer of the first information layer identified in claim 1 is the bumps and grooves provided on the substrate **1**, and not the bumps and grooves on layer **3** as postulated by applicants' in their Remarks (pg. 8, lines 20-21). The bumps and grooves on layer **3** are the second information layer.

With regard to applicants' new limitations that the refractive index layer is formed **on** the optical separating layer and the transmittance adjusting layer is formed **on** the

low refractive index layer, the Examiner notes the broadest reasonable interpretation of the word “on” as defined by Meriam-Webster Online: “**1c** used as a function word to indicate position in close proximity with.” The Examiner deems that using this interpretation of the word “on,” the refractive index layer is formed **on** the optical separating layer and the transmittance adjusting layer is formed **on** the low refractive index layer.

To sum up, although Figure 4b does not explicitly show the bumps and grooves on each of the layers **1** and **3**, it does not change the fact that Higuchi et al. disclose an optical medium comprised of a substrate **1**, a recording layer of bumps and grooves on the substrate **1**, a transmittance adjusting layer **7b**, which is formed on the low refractive index layer **8**, which is formed on the spacer layer **3**, which has on its upper surface the second information layer of bumps and grooves identical to that claimed.

With regard to the rejection of claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al. '070, applicants are arguing that the rearrangement of layers would not be an obvious matter of choice.

The Examiner respectfully disagrees. The Examiner has set forth a *prima facie* case that the rearrangement of the layers would have been obvious to one having ordinary skill in the art. Applicants have provided no evidence contradicting that statement from the Examiner, and therefore the Examiner has maintained his rejection. It is well-known in the art to place dielectric layers throughout a recording stack for protective purposes, and given that Higuchi et al. '070 disclose an arrangement of a transmittance adjustment layer and reflective layer identical to that claimed, the

Examiner deems it would have been obvious to one having ordinary skill in the art, absent objective evidence to the contrary, to perform the rearrangement of the layers of Higuchi et al. '070; furthermore, it would have equally been obvious to one having ordinary skill in the art to duplicate the material of layer **6** in Figure 4A and place that material on top of layer **2b**. The motivation would be to provide adequate protection from heat throughout the medium.

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GERARD T. HIGGINS whose telephone number is

Art Unit: 1794

(571)270-3467. The examiner can normally be reached on M-F 7:30am-5pm est. (1st Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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